

## IN THE CLAIMS:

What is claimed is:

1. A method for communication and reconnaissance coupled with protection for the auditory system, comprising the acts of:

Attenuating ambient sound waves;

Transducing ambient sound waves into electronic signals for an electronic circuit;

Increasing said electronic signals at a fixed rate of gain;

De-activating the sound output of said electronic circuit in the event of the saturation of said electronic circuit;

Re-activating the sound output of said electronic circuit after conclusion of the saturation of said electronic circuit;

Transducing said electronic signals into sound waves suitable for the auditory system;

Supplying said sound waves suitable for the auditory system to the external auditory canal of the ear; and

Providing output to and input from a radio communications system;

such that ambient sound waves are attenuated and sound waves suitable for the auditory system are transmitted to the external auditory canal of the ear unless the sound output of the electronic circuit has been de-activated.

2. The method in claim 1, wherein de-activating the sound output of said electronic circuit occurs in 10 microseconds or less in the event of the saturation of said electronic circuit.

3. The method in claim 1, wherein re-activating the sound output of said electronic circuit occurs in 30 microseconds or less after conclusion of the saturation of said electronic circuit.

4. The method in claim 1, wherein de-activating the sound output of said electronic circuit occurs in the event the ambient sound waves exceed a value of 139 decibels peak.
5. The method in claim 1, wherein re-activating the sound output of said electronic circuit occurs in the event the ambient sound waves no longer exceed a value of 139 decibels peak.
6. A method for communication and reconnaissance coupled with protection for the auditory system, comprising the acts of:

Attenuating ambient sound waves;

Transducing ambient sound waves into electronic signals for an electronic circuit;

Increasing said electronic signals at a fixed rate of gain;

De-activating the sound output of said electronic circuit in the event of the saturation of said electronic circuit;

Re-activating the sound output of said electronic circuit after conclusion of the saturation of said electronic circuit;

Transducing said electronic signals into sound waves suitable for the auditory system; and

Supplying said sound waves suitable for the auditory system to the external auditory canal of the ear;

such that ambient sound waves are attenuated and sound waves suitable for the auditory system are transmitted to the external auditory canal of the ear unless the sound output of the electronic circuit has been de-activated.

7. The method in claim 6, wherein de-activating the sound output of said electronic circuit occurs in 10 microseconds or less in the event of the saturation of said electronic circuit.

8. The method in claim 6, wherein re-activating the sound output of said electronic circuit occurs in 30 microseconds or less after conclusion of the saturation of said electronic circuit.
9. The method in claim 6, wherein de-activating the sound output of said electronic circuit occurs in the event the ambient sound waves exceed a value of 139 decibels peak.
10. The method in claim 6, wherein re-activating the sound output of said electronic circuit occurs in the event the ambient sound waves no longer exceed a value of 139 decibels peak.
11. An apparatus for communication and reconnaissance coupled with protection for the auditory system, comprising:
  - a sound attenuation barrier for each ear;
  - an electronic circuit for each ear, comprising:
    - a microphone for transducing ambient sounds into electronic signals, and having an output;
    - a fixed-gain pre-amplifier, having an input connected to the output of said microphone, having an output;
    - a rheostat having an input connected to the output of said fixed-gain pre-amplifier and having an output;
    - a fixed-gain output amplifier, having an input connection to the output of said rheostat, and having an output;
    - an earphone, having an input connection to the output of said fixed-gain output amplifier;
    - a set of gain control switches coupled to said rheostat for each ear, for increasing or decreasing the level of said electronic signals supplied thereto;

a power supply that establishes a hard output limit for the electronic circuit when said electronic signal levels exceed seventy-five percent (75 %) of the power supply voltage;

an output to a radio communications system; and

an input from said radio communications system;

such that ambient sound waves are attenuated and sound waves suitable for the auditory system are transmitted to the external auditory canal of the ear unless the sound output of the electronic circuit has been de-activated.

12. The apparatus as in Claim 11, in which the microphone is built into a communications ear plug.

13. An apparatus for communication and reconnaissance coupled with protection for the auditory system, comprising the acts of:

a sound attenuation barrier for each ear;

an electronic circuit for each ear, comprising:

at least one microphone for transducing ambient sounds into electronic signals,  
having an output;

a fixed-gain pre-amplifier, having an input connected to the output of said  
microphone, and having an output;

a rheostat having an input connected to the output of said fixed-gain pre-amplifier  
and having an output;

a fixed-gain output amplifier, having an input connection to the output of said  
rheostat, and having an output;

an earphone, having an input connection to the output of said fixed-gain output amplifier;

a set of gain control switches coupled to said rheostat for each ear, for increasing or decreasing the level of said electronic signals supplied thereto; and

a power supply that establishes a hard output limit for the electronic circuit when said electronic signal levels exceed seventy-five percent (75 %) of the power supply voltage;

such that ambient sound waves are attenuated and sound waves suitable for the auditory system are transmitted to the external auditory canal of the ear unless the sound output of the electronic circuit has been de-activated.

14. The apparatus as in Claim 13, in which the microphone is built into a communications ear plug.

15. An apparatus for communication and reconnaissance coupled with protection for the auditory system, comprising:

a sound attenuation barrier for each ear;

an electronic circuit for each ear, comprising:

a microphone for transducing ambient sounds into electronic signals, having an output;

a fixed-gain pre-amplifier, having an input connected to the output of said microphone, and having an output;

a rheostat having an input connected to the output of said fixed-gain pre-amplifier and having an output;

a fixed-gain output amplifier, having an input connection to the output of said rheostat, and having an output;

a set of gain control switches coupled to said rheostat for each ear, for increasing or decreasing the level of said electronic signals supplied thereto;

a power supply that establishes a hard output limit for the electronic circuit when said electronic signal levels exceed seventy-five percent (75 %) of the power supply voltage;

an output to a radio communications system; and

an input from said radio communications system;

such that ambient sound waves are attenuated and sound waves suitable for the auditory system are transmitted to the external auditory canal of the ear unless the sound output of the electronic circuit has been de-activated.

16. The apparatus as in Claim 15, in which the microphone is built into a communications ear plug.

17. An apparatus for communication and reconnaissance coupled with protection for the auditory system, comprising:

a sound attenuation barrier for each ear;

an electronic circuit for each ear, comprising:

at least one microphone for transducing ambient sounds into electronic signals,

having an output;

a fixed-gain pre-amplifier, having an input connected to the output of said microphone, and having an output;

a rheostat having an input connected to the output of said fixed-gain pre-amplifier and having an output;

a fixed-gain output amplifier, having an input connection to the output of said rheostat, and having an output;

a set of gain control switches coupled to said rheostat for each ear, for increasing or decreasing the level of said electronic signals supplied thereto; and

a power supply that establishes a hard output limit for the electronic circuit when said electronic signal levels exceed seventy-five percent (75 %) of the power supply voltage;

such that ambient sound waves are attenuated and sound waves suitable for the auditory system are transmitted to the external auditory canal of the ear unless the sound output of the electronic circuit has been de-activated.

18. The apparatus as in Claim 17, in which the microphone is built into a communications ear plug.